REMARKS

This amendment responds to the final office action mailed February 9, 2009. In the office action the Examiner:

- rejected claims 91, 102, 113, 124 and 125 as being indefinite under 35 U.S.C. 112, first paragraph; and

- rejected claims 91-135 under 35 U.S.C. 102(e) as being anticipated by Barg et al (U.S. Patent No. 6,707,454).

After entry of this amendment, the pending claims are: claims 91-135.

Specification Amendment

The Applicants have amended paragraph [0071] to correct a typographical error. No new matter is added.

Claim Amendments

The Applicants have also amended claim 91 to recite the following features:

- a method implemented at a computer having one or more processors and memory storing programs executed by the one or more processors (see, *e.g.*, support for the amendment in at least paragraphs [0047]-[0068] in connection with Figure 5 of the present application);

- metadata in the schema display region that describes a hierarchical structure of the dataset including the first dimension level and the second dimension level (see, *e.g.*, support for the amendment in at least paragraphs [0086] and [0087] in connection with Figure 8 of the present application);

- detecting user requests to associate the metadata identifying the first and second dimension levels in the schema display region with either the first axis shelf or the second axis shelf, respectively (see, *e.g.*, support for the amendment in at least paragraph [0076]-[0078] in connection with Figure 8 of the present application); and

- A graphical user window including a schema display region and a data visualization region.

The Applicants have made similar amendments to claims 102, 113, and 124-125.

No new matter has been added. With respect to all amendments, Applicants have not dedicated or abandoned any unclaimed subject matter. Moreover, Applicants have not acquiesced to any characterizations of the invention, nor any rejections or objections of the claims, made by the Examiner.

Claim Rejections – 35 U.S.C. §112

Independent claims 91, 102, 113, 124, and 125 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement because the Examiner believed that the following feature:

> detecting user interactions with the schema display region and the
> first and second axis shelves to associate the first and second
> dimension levels with either the first axis shelf or the second axis
> shelf, respectively

was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The lack of enablement is especially directed to how the interaction is detected and what result is generated.

With the amendments of the pending claims above, the Applicants respectfully submit that the claim rejections under 35 U.S.C. 112, first paragraph, are moot and the Examiner should withdraw the rejections accordingly.

Claim Rejections – 35 U.S.C. §102(e)

For the reasons below, the Examiner's rejection against claims 91-135 under 35 U.S.C. 102(e) should be withdrawn because Barg fails to disclose all the features recited by each of the independent claims 91, 102, 113, 124 and 125. For brevity, Applicants choose claim 91 as a representative claim for discussion. But the same arguments are equally applicable to the other independent claims.

A.   The 102(e) rejection of claim 91 fails because Barg does not teach a schema display region as required by claim 91.

Claim 91, as amended, recites a computer-implemented method of visualizing a dataset using a graphical user interface window. The graphical user interface window includes a schema

display region that includes metadata describing a hierarchical structure of the dataset including a first dimension level and a second dimension level.

Fig. 20 (reproduced below with mark-ups[1]) depicts an exemplary graphical user interface window supporting claim 91. The graphical user interface window includes a schema display region (also known as a "schema box" in the specification of this application) and a data visualization region. The schema display region includes metadata describing three hierarchical structures of the dataset being visualized. In particular, the hierarchical structure for the dimension, "Location," includes two dimension levels, "Market" and "State;" the hierarchical structure for the dimension "Product" includes two dimension levels, "Producttype" and "Product"; and the hierarchical structure for the dimension "Time" includes three dimension levels, "Year", "Quarter", and "Month."
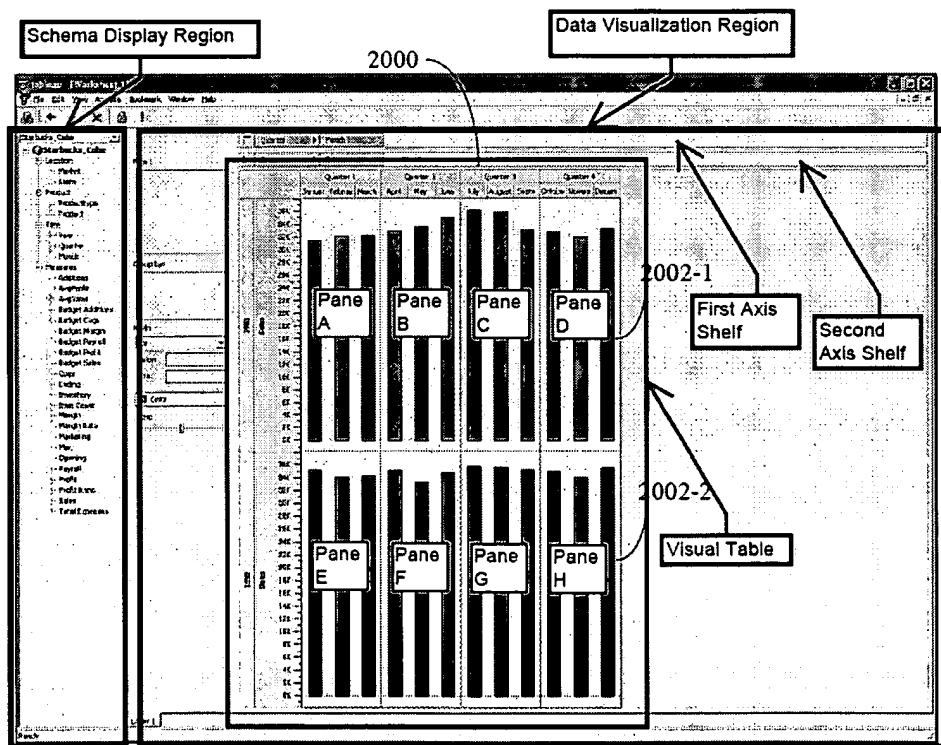

Fig. 20

In the final office action dated 02/09/09, the Examiner contended that Figures 1 and 2 and col. 6, lines 18-67 of Barg disclose a schema display region as required by claim 91.

Applicants respectfully disagree and traverse.

Figure 1 of Barg (reproduced below) is actually a Microsoft Excel™ pivot table. *Col. 2, lines 28-29 of Barg.* It is well known in the art that an Excel pivot table is a tool for <u>data analysis</u>

and summarization. But the data being analyzed and summarized in the pivot table refers to one or more content items stored in a dataset, not metadata that describes a collection of multiple content items and hierarchical levels between the content items. In particular, Figure 1 of Barg depicts the data being analyzed and summarized including:

- The content items of the "product_type" dimension 21 and the low-level "product" dimension 22 nested within the "product_type" dimension 21 (*Col. 2, lines 45-46 of Barg*);

- The content items of the "state" dimension 30 and the "QTR" dimension 40 (*Col. 2, lines 35-36 of Barg*); and

- The content items of the five measures within each cell, "sales" 50, "expense" 51, "profit" 52, "cost of goods sold" (COGS) 53, and "marketing" 54 as well as the margin 55 totaled in different rows and columns (*Col. 2, lines 38-41 of Barg*).

Thus, Figure 1 of Barg does not include a schema display region for displaying metadata that describes a hierarchical structure between the content items of the dataset as required by claim 91.

Moreover, Figures 1 and 2 of Barg are two independent graphical user interface windows and there is no dependency between the two windows. Even if Figure 1 of Barg included a schema display region and Figure 2 of Barg included a data visualization region, they would still be different from the graphical user interface window as required by claim 91.

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[1] Note that Applicants add the mark-ups in Figure 20 above for illustration only.
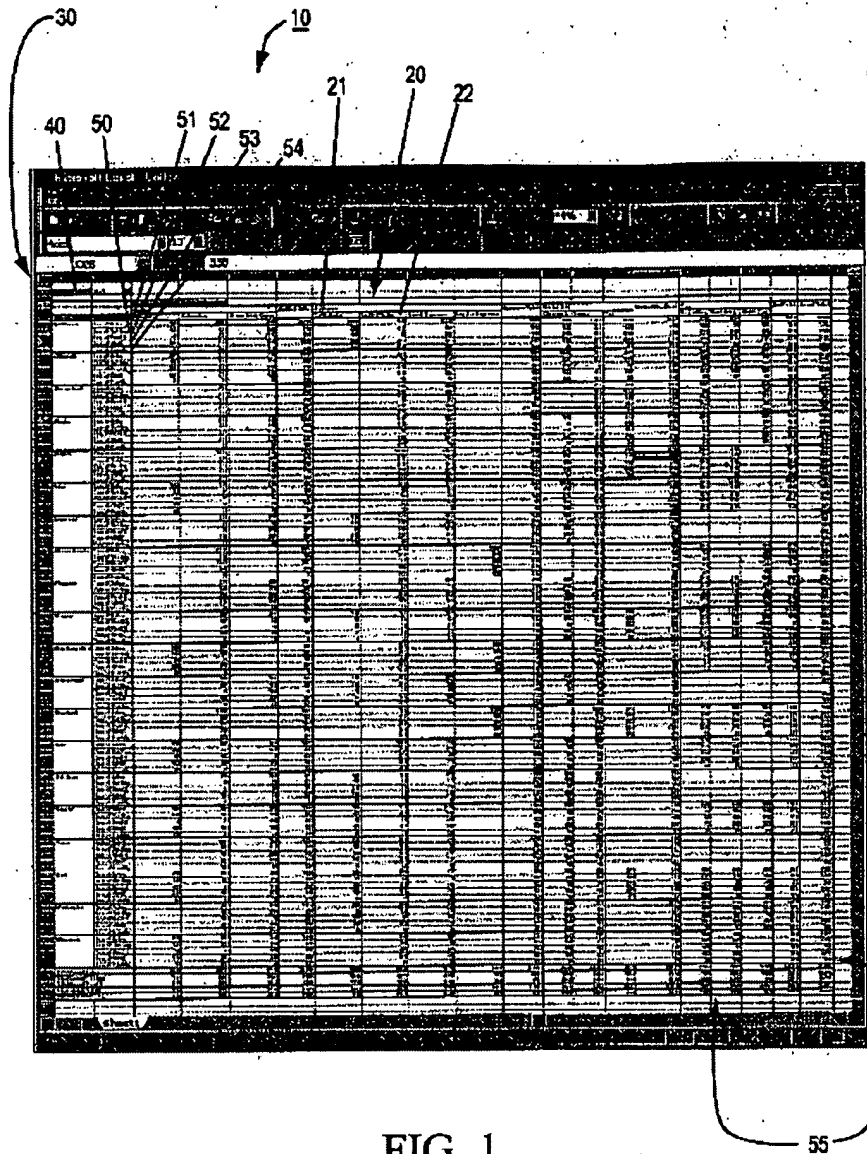
FIG. 1

Figure 2 of Barg (produced below) also fails to disclose a schema display region as required by claim 91. According to Barg, the single measure perspective 100 shown in Figure 2 is used to visualize the pivot table shown in Figure 1 of Barg. *Col. 6, lines 19-22 of Barg.* Thus, the focus of the single measure perspective 100 including the 2-D dimensional view portion 110 and the 3-D multiscape view 122 is the measure data (*i.e.*, profit) of the dataset as shown in Figure 1, not the metadata describing the hierarchical structure of the dataset.

FIG. 2

Besides the two figures, the Examiner also cited the specification at col. 6, lines 18-67 of Barg to support his contention that Barg teaches the schema display region as required by claim 91. For comparison, the relevant text from Barg is reproduced below.

> FIG. 2 shows one exemplary embodiment of a single measure perspective 100 according to this invention. The single measure perspective is used to visualize the pivot table shown in FIG. 1. The data visualization systems and methods of this invention are able to read the pivot table data directly from an Excel™ worksheet. The single measure perspective presents the entire pivot table for a selected measure. The pivot table data is flattened to 2 dimensions and is used as input data to the single measure perspective shown in FIG. 2. In the exemplary embodiment of the single measure perspective, which uses a three-dimensional multiscape view, the dimensions of the cube, or pivot table, are used as the X and Y axes for the three-dimensional multiscape view. The measure, i.e., the quantity displayed at the intersection of the dimensions, is used as the value/weight of the glyphs that extend along the Z axis. The weight determines the size of the glyphs.
>
> In the exemplary embodiment of the single measure perspective shown in FIG. 2, the measure "profits" is visualized. However, it should be appreciated that the single measure perspective according to this invention can be used to visualize any measure contained in the particular pivot table being visualized. Additionally, as discussed in greater detail below, the particular measure being visualized in the single measure perspective can be

switched at will by the user between any measure contained in the particular pivot table being visualized.

As shown in FIG. 2, the single measure perspective according to this invention is displayed using a standard graphical user interface that is organized into a number of portions. These portions can include a toolbar 130, a dimensional view portion 110, a single measure view portion 120 and an optional totals table portion 140. The toolbar extends across the top of the exemplary embodiment of the single measure perspective shown in FIG. 2. However, it should be appreciated that the toolbar can be located anywhere in the graphical user interface. The various control functions implemented in the toolbar are discussed below in greater detail with respect to FIG. 7. The various drop-down and pop-up menus and buttons used to implement this toolbar follow the standard Microsoft conventions.

The dimensional view portion 110 includes one or more interactive dimensional views 112. In the exemplary embodiment of the single measure perspective shown in FIG. 2, the dimensional view portion is implemented as a bar chart view portion. The exemplary embodiment of the bar chart view portion shown in FIG. 2 includes three interactive bar chart views that are positioned along the left edge of the graphical user interface. In particular, in the exemplary embodiment of the single measure perspective shown in FIG. 2, one dimensional view is displayed in the dimensional view portion for each dimension of the selected measure. For the profit measure of the pivot table shown in FIG. 1, these dimensions include product_type, product and state. Thus, the three dimensional views show the profits totaled by product_type, by product, and by state, respectively. The dimensional view portion of the exemplary embodiments of the single measure and multiple measures perspectives shown in FIGS. 2 and 4 can also include a pages portion 114 that includes a page combo box that allows the user to select the page of data to be displayed. The dimensional view portion also includes a slider bar portion 116 that allows the user to move, add or remove various dimensional views from the dimensional view portion and various drop-down menus from the page combo box of the pages portion.

Col. 6, line 17 to Col. 7, line 16 (*Emphasis Added*)

As indicated by the highlighted text above, the single measure perspective 100 in Figure 2 of Barg includes three separate one-dimensional views 112, each view corresponding to a respective dimension such as "product_type," "product," and "state." But there is no schema display region in the figure that includes metadata describing a hierarchical structure of the dataset as required by claim 91. For example, the single measure perspective 100 in Figure 2

provides no disclosure of the relationship between the metadata of the dimension "product_type" and the metadata of the dimension "product." Each of the three one-dimensional views 112 is a summation of the 3-D multiscape view 122 along one or more axes. For example, the "State" dimensional view 112 is a summation of the 3-D multiscape view 122 along the "product_type" and "product" axis in the multiscape view 112. There is no teaching of the metadata describing the hierarchical structure of the dataset in any of the one-dimensional views 112.

Therefore, Applicants respectfully submit that Barg cannot anticipate claim 91 because it fails to teach or suggest the feature of a schema display region in the graphical user interface window as required by claim 91.

B.   The 102(e) rejection of claim 91 fails because Barg does not teach the feature of detecting user requests to associate the metadata in the schema display region with the first and second axis shelves as required by claim 91.

As explained above, Barg fails to disclose a schema display region in Figures 1 and 2. Accordingly, Barg provides no teaching relating to any aspect of the schema display region as required by clam 91, including detecting user requests to associate the metadata with the axis shelves in the data visualization region.

Moreover, Barg fails to teach any axis shelf as required by claim 91. As shown in Figure 8 above, the first and second axis shelves 708-4 and 708-5 are containers such that a user can drag operand names from the schema box 702 and drop them into the axis shelves 708-4 and 708-5. For example, the operand names "Quarter" and "Profit" are dropped into the axis shelf 708-5 and the operand names "Producttype" and "Sales" are dropped into the axis shelf 708-4. The association of a respective operand name with a respective axis shelf is arbitrarily defined by user requests. There is no predetermined association between an operand name and an axis shelf. For example, Figure 20 above depicts that the operand names "Quarter" and "Month" are now in the axis shelf 708-5 while the operand names "Year" and "Sales" are in the axis shelf 708-4.

In the office action dated 02/09/09, the Examiner cited Figure 2 and col. 5, lines 52-62 of Barg as teaching the claimed feature. Figure 2 depicts three drop-down menus near the top of the graphical user interface, with "Multiscape," "State," and "Profit," chosen in a respective list. But the multiscape view 122 includes two dimensional axes, "State" being one of the two axes and "Product_Type|Product" being the other one. According to Barg, it seems that the

association of "Product_Type|Product" with the corresponding axis is by default, not per user definition.

For reference, col. 5, lines 52-62 of Barg is reproduced below:

> <u>By visually manipulating the row, column, and page dimensions, navigation through the pivot table is facilitated.</u> The anchored measures and multiple measures perspectives according to this invention provide unique and novel ways to visualize several measures simultaneously. These perspectives enable users to discover interactions among several measures. By interactively selecting important regions of the data and focusing in on those selected regions by excluding unselected data, users are able to see details within context.

Col. 5, lines 52-62 (*Emphasis Added*)

As highlighted above, this paragraph simply suggests that a user can generally navigate through the pivot table as shown in Figure 2 by manipulating the row, column, and page dimensions. But it does not teach or suggest that the feature of detecting user requests to associate the metadata in the schema display region with the first and second axis shelves as required by claim 91.

Thus, Applicants respectfully submit that Barg cannot anticipate claim 91 because it fails to teach or suggest the feature of detecting user requests to associate metadata in the schema display region with first and second axis shelves in the data visualization region as required by claim 91.

C.   **The 102(e) Rejection of claim 91 fails because Barg does not teach forming a plurality of panes, each pane having a first axis corresponding to the dimension level associated with the first axis shelf and a second axis corresponding to the dimension level associated with the first axis shelf as required by claim 91.**

Figure 20 of the present application depicts an embodiment where the user submits requests through dragging-and-dropping to associate the "Quarter" and "Month" dimension levels with the first axis shelf and the "Year" dimension level and the "Sales" measure with the second axis shelf, respectively. As a result, among the three hierarchical levels of the "time" dimension, the "quarter" and "month" levels are displayed in the first axis shelf 708-5 and the "year" level is displayed in the second axis shelf 708-4 of the data visualization region. The visual table is populated with 4x2 panes, "Pane A" through "Pane H," each pane having a similar

bar chart representing the respective sales within the three months of a specific quarter in a particular year.

In contrast, Figure 2 of Barg includes three one-dimensional views 112, none of which has a first axis corresponding to one level of a hierarchical dimension and a second axis corresponding to another level of the hierarchical dimension as required by claim 91. In fact, each of these three views has only one dimension axis ("State," "Product_Type," and "Product") and one measure axis ("Profit"). Therefore, the three one-dimensional views 112 in Figure 2 of Barg do not anticipate the feature of forming a plurality of panes, each pane having two axes associated with different levels of a hierarchical dimension, as required by claim 91.

Although the 3-D multiscape view 122 has two dimension axes and one measure axis, the two dimension axes actually correspond to two different dimensions, not two different hierarchical levels of the same dimension as required by claim 91. For example, one of the two dimension axes corresponds to the "State" dimension and the other dimension axis corresponds to the concatenated "Product_Type|Product" dimension.

Further, claim 91 requires that the two levels of the same hierarchical dimension be associated with different axes of each pane. But the content items of the concatenated "Product_Type|Product" dimension are always associated with the same horizontal axis in the 3-D multiscape view 122 (e.g., "Tea | Green Tea," "Tea | Earl Grey," "Tea | Darjeeling," etc.).

Contrary to the Examiner's contention, col. 8, lines 49-54 of Barg (reproduced below)

> The "select mode selection" button returns the mouse to a selection
> mode to allow the user to select a portion of the three-dimensional
> multiscape view. The "re-sort rows/columns" button allows the
> user to alter which dimensions are associated with each axis of the
> three-dimensional multiscape view.

merely teaches that a user is allowed to determine the association between dimensions and axes. It provides no teaching of associating different levels of the same hierarchical dimension with different axes as required by claim 91.

Finally, col. 13 and Figure 6 of Barg relate to a toolbar that includes a number of graphical user interface menu items that allows a user to update the views shown in Figure 2 of Barg. But they provide no teaching of associating different levels of the same hierarchical dimension with different axes as required by claim 91.

For example, col. 13, lines 39-44 of Barg discloses the following:

> For example, the "arrange rows and columns" button allows the user to rearrange how the dimensions are grouped and displayed on the axes of the multiscape. <u>The functions provided by these buttons are described in greater detail below.</u>

Emphasis Added.

But the detailed description on col. 15, lines 34-40 of Barg (reproduced below) does not provide any indication that a user can use this button to associate different levels of the same hierarchical dimension with different axes of a pane.

> As indicated above, in embodiments that use the toolbar 430, <u>selecting the "arrange rows and columns" button 518 allows the user to rearrange the dimensional views, by causing one or more dimension views to be rearranged within the graphical user interfaces</u> that are usable with the data visualization systems and methods according to this invention.

Emphasis Added.

Thus, Applicants respectfully submit that Barg cannot anticipate claim 91 because it fails to teach or suggest the feature of forming a plurality of panes, each pane having two axes corresponding to a respective one of the first and second dimension levels as required by claim 91.
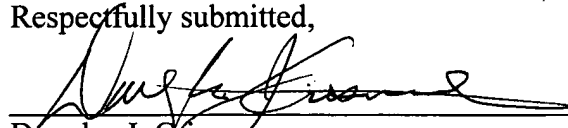
D.   Conclusion

In sum, claim 91 and its dependent claims are not anticipated by Barg for at least the reasons above. Because independent claims 102, 113, 124, and 125 substantially correspond to claim 91, these respective claim sets are not anticipated by Barg for at least the same reasons. Applicants respectfully request that the Examiner withdraw rejections under 35 U.S.C. 102(e) against the pending claims 91-135

Finally, it should be noted that, by responding in the foregoing remarks only to particular positions asserted by the Examiner, Applicants do not necessarily acquiesce in other positions that have not been explicitly addressed in this amendment. In addition, Applicants' arguments for the patentability of a claim should not be understood as implying that no other reasons for the patentability of that claim exist.

In light of the above amendments and remarks, the Applicant respectfully submits that all the pending claims are in condition for allowance and all the pending claim requests that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney at (650) 843-4000, if a telephone call could help resolve any remaining items.

Respectfully submitted,

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